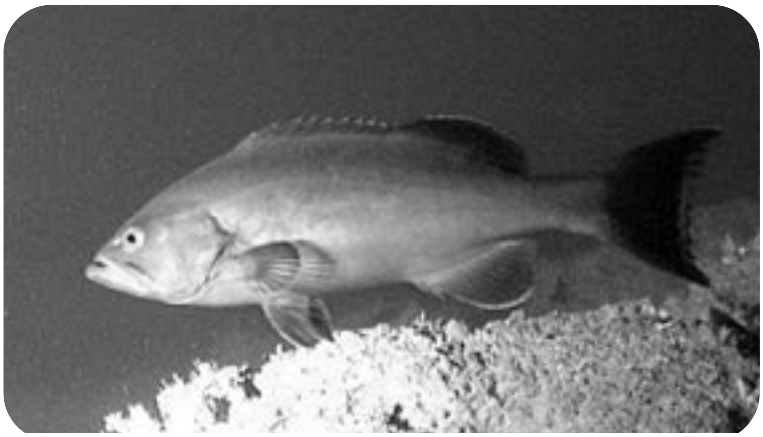
Sub Dives Deep to Map Features and Count Fish

Mary Tagliareni, FKNMS Education and Volunteer Coordinator

One could not have asked for better weather for the Sustainable Seas Expeditions (SSE) in the Florida Keys until September 16th, when the outer squalls of Hurricane Debbie kicked up the wind and seas and the skies became overcast, threatening rain. On September 17th, Mother Nature won her battle with the National Oceanic Atmospheric Administration ship *Gordon Gunter* at the Islamorada Hump, 20 miles off of the Upper Keys. The force of the waves caused damage to the port rudder, and the ship was forced to return to Key West for repairs, thus ending the 2000 field season of SSE in the Florida Keys.

Prior to the unexpected ending, the mission had gone well, completing twenty dives to depths of 1600 feet. The advantages of *DeepWorker,* a one-man submersible, were utilized in all of the dives. Dives were either deeper than SCUBA depths or the length of time of the dive was greatly extended to conduct the work that needed to be done.



Yellowmouth grouper photographed by NOAA's SSE Education

The proposed Tortugas Ecological Reserve was the focus of the *DeepWorker* dives. The Tortugas area beyond SCUBA depths is a relatively unexplored area. The ability of the *Gunter* to perform low-resolution bathymetric surveys enhanced the quality of the dives done by the DeepWorker. Features, drop-offs, ledges, bottom cover, and fish aggregations discovered by the *Gunter* were later explored in detail and documented on video tapes by *DeepWorker*.

Dr. Erich Mueller, Mote Marine Laboratory Center for Tropical Research, applied coral disease research techniques that he previously used SCUBA diving while piloting the *DeepWorker*. Dr. Mueller conducted transects with two lasers at various depths to obtain high quality video footage of the corals for further quantitative analysis. The health of the reefs in the Tortugas area is affected by water quality in the Gulf of Mexico. Drifter studies show that water travels from the Gulf of Mexico off of the coast of southwest Florida to the reefs of the Florida Keys and the Tortugas. There is concern that nutrient-rich waters produced during flood episodes on the Caloosahatchee River of southwest Florida and the Mississippi River will periodically threaten the coral reefs of the Florida Keys National Marine Sanctuary. These reefs normally thrive in an oligotrophic, or low-nutrient, environment. When nutrient-rich waters reach the coral reefs, the reefs can become overgrown with algae, which thrives in nutrient-rich conditions. This algae can prevent essential sunlight from reaching the coral colonies and can eventually cause the death of these reef-building, or hermatypic, corals.

Laddie Akins, Director of the Reef Environmental Education Foundation (REEF); Francesca M. Cava, National Geographic Society's Sustainable Seas Expedition Education Programs Project Manager; Laura Francis, NOAA's SSE Coordinator; and Mary Tagliareni, FKNMS Education Coordinator; comprised the "education dive team." The team's task for five days of the mission was to pilot the submersible and survey fish populations in the deep reef environment. These fish counts were the first conducted in this area at depths between 200 and 400 feet. The abundance and variety of fish seen on these dives confirmed the necessity of setting this area aside as a no-take area and confirmed the importance of this area as spawning grounds for grouper.

In addition to the education team's deep reef fish counts, local high school students conducted fish counts while SCUBA diving, students from metropolitan cities discussed the state of the oceans with Dr. Sylvia Earle and Secretary of Commerce Norman Y. Mineta, and over four hundred visitors toured the *Gunter* and *DeepWorker* during the open house in Key West.

Note: This article appeared in the Winter 2000 issue of the newsletter of the Florida Keys National Marine Sanctuary, **Sounding Line.** *For more information, visit:floridakeys.noaa.gov.*